

I CLAIM:

1. A powered adjustable chair comprising:
- a seat connected to a base for vertical movement with respect thereto and having a surface for supporting a patient;
- a back secured to said chair proximate one edge of said seat and having a surface for supporting a patient;
- a powered motion mechanism operatively connected to at least one of said seat and said back;
- a first power supply connected to said powered motion mechanism for supplying power thereto at a first predetermined voltage;
- a control electrically coupled to said powered motion mechanism for controlling the operation thereof, said control including a switch plate operatively connected to a microprocessor, said switch plate including a plurality of flat, tactile-feel membrane switches disposed on said seat back for allowing an operator to direct the operation of said control and to thereby also direct desired powered movement of said chair; and,
- a second power supply connected to said control for supplying power to said control including said membrane switches at a second predetermined voltage which is less than said first predetermined voltage.

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2. The chair of claim 1 wherein said powered motion mechanism comprises a power lift mechanism operatively connected to said seat for vertically raising and lowering said seat and back.

sub 12 3. The chair of claim 2 further comprising a power recline mechanism operatively connected to said back for moving said back angularly with respect to said base.

10 4. The chair of claim 3 wherein said control selectively provides alternative first and second output signals in response to actuation of one of said plurality of membrane switches connected to said control, said first output signal being a maintained output signal that is sustained ON in response to closing contacts in said one switch, said second output signal being a momentary output signal that is turned ON in response to closing contacts in said one  
15 switch, said momentary output signal being turned OFF in response to the contacts of said one switch opening.

5. The chair of claim 4 wherein said control further includes means for selectively activating and deactivating an auto up mode, wherein when said auto up mode is activated a maintained auto up output signal is turned ON in response to actuation of one of said switches so as to cause said power lift and recline mechanisms to raise and recline said chair to a predetermined position, and wherein said one switch turns ON one of said first and second output signals upon actuation thereof after deactivation of said auto up mode.

6. The chair of claim 3 wherein said control further includes means for selectively activating and deactivating an auto up mode, wherein when said auto up mode is activated a maintained auto up output signal is turned ON in response to actuation of one of said switches to cause said power lift and recline mechanisms to raise and recline said chair to a predetermined position, and wherein upon deactivation of said auto up mode a different output signal is turned ON in response to actuation of said one switch.

7. The chair of claim 1 wherein said powered motion mechanism comprises a power recline mechanism operatively connected to said back for moving said back angularly with respect to said base.

8. The chair of claim 1 wherein said switch plate is located on a side edge of said seat back.

9. The chair of claim 1 wherein a switch plate is located on each of two opposite side edges of said seat back.

pub 5 A8 10. The chair of claim 1 wherein said control selectively provides alternative first and second output signals in response to actuation of one of said plurality of membrane switches connected to said control, said first output signal being a maintained output signal that is sustained ON in response to closing contacts in said one switch, said second output signal being a momentary output signal that is turned ON in response to closing contacts in said one switch, said momentary output signal being turned OFF in response to the contacts of said one switch opening.

11. The chair of claim 1 wherein said control further includes a control circuit responsive to an actuation of a disable switch and operative to selectively disable said switches on said switch plate from directing movement of said chair while power is maintained to said control.

12. The chair of claim 11 wherein said disable switch comprises a predetermined combination of switches on said switch plate.

5 13. The chair of claim 12 wherein said control further includes an enable switch for selectively enabling operation of said switches on said switch plate to direct movement of said chair, and wherein said enable switch comprises said predetermined combination of switches.

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A powered adjustable chair comprising:

a seat connected to a base for vertical movement with respect thereto and having a surface for supporting a patient;

a back secured to said chair proximate one edge of said seat and having a surface for supporting a patient;

a powered motion mechanism operatively connected to at least one of said seat and said back; and,

a control electrically coupled to said power lift mechanism and said power recline mechanism for controlling the operation thereof, said control system including a plurality of switches operatively connected to a microprocessor for allowing an operator to direct the operation of said control and to thereby also direct movement of said chair, said control selectively providing alternative first and second output signals in response to actuation of one of said plurality of switches connected to said control, said first output signal being a maintained output signal that is sustained ON in response to closing contacts in said one switch, said second output signal being a momentary output signal that is turned ON in response to closing contacts in said one switch, said momentary output signal being turned OFF in response to the contacts of said one switch opening.

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The chair of claim 14<sup>15</sup> wherein said powered motion mechanism comprises a power lift mechanism operatively connected to said seat for vertically raising and lowering said seat and back.

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The chair of claim 15 further comprising a power recline mechanism operatively connected to said back for moving said back angularly with respect to said base.

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The chair of claim 16 wherein said control further includes means for selectively activating and deactivating an auto up mode, wherein when said auto up mode is activated a maintained auto up output signal is turned ON in response to actuation of one of said switches so as to cause said power lift and recline mechanisms to raise and recline said chair to a predetermined position, and wherein said one switch turns ON one of said first and second output signals upon actuation thereof after deactivation of said auto up mode.

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The chair of claim 14<sup>15</sup> wherein said control further includes a control circuit responsive to an actuation of a disable switch and operative to selectively disable said plurality of switches from directing movement of said chair while power is maintained to said control.

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The chair of claim ~~18~~ wherein said disable switch comprises a predetermined combination of said plurality of switches.

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The chair of claim ~~19~~ wherein said control further

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includes an enable switch for selectively enabling operation of said plurality of switches to direct movement of said chair, and wherein said enable switch comprises said predetermined combination of said plurality of switches.



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A powered adjustable chair comprising:

a seat connected to a base for vertical movement with respect thereto and having a surface for supporting a patient;

a back secured to said chair proximate one edge of said seat and having a surface for supporting a patient;

a powered motion mechanism operatively connected to at least one of said seat and said back; and,

a control electrically coupled to said power lift mechanism and said power recline mechanism for controlling the operation thereof, said control including a plurality of switches operatively connected to a microprocessor for allowing an operator to direct the operation of said control and to thereby also direct movement of said chair, said control further including means for selectively activating and deactivating an auto up mode, wherein when said auto up mode is activated a maintained auto up output signal is turned ON in response to actuation of one of said switches so as to cause said powered motion mechanism to move said chair to a predetermined desired position, and wherein upon deactivation of said auto up mode a different output signal is turned ON in response to actuation of said one switch.

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The chair of claim ~~21~~<sup>23</sup> wherein said powered motion mechanism comprises a power lift mechanism operatively connected to said seat for vertically raising and lowering said seat and back.

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The chair of claim 22 further comprising a power recline mechanism operatively connected to said back for moving said back angularly with respect to said base and wherein said maintained auto up output signal causes said power lift mechanism and said power recline mechanism to respectively raise and recline said chair to said predetermined desired position.

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The chair of claim ~~24~~<sup>25</sup> wherein said control further includes a control circuit responsive to an actuation of a disable switch and operative to selectively disable said plurality of switches from directing movement of said chair while power is maintained to said control.

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The chair of claim ~~24~~<sup>25</sup> wherein said disable switch comprises a predetermined combination of said plurality of switches.

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The chair of claim <sup>26</sup>~~25~~ wherein said control further

includes an enable switch for selectively enabling operation of said plurality of switches to direct movement of said chair, and wherein said enable switch comprises said predetermined combination of said plurality of switches.

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27. A powered adjustable chair comprising:
- a seat connected to a base for vertical movement with respect thereto and having a surface for supporting a patient;
- a back secured to said chair proximate one edge of said seat and having a surface for supporting a patient;
- a powered motion mechanism operatively connected to at least one of said seat and said back; and,
- a control electrically coupled to said power lift mechanism and said power recline mechanism for controlling the operation thereof, said control including a plurality of switches operatively connected to a microprocessor for allowing an operator to direct the operation of said control and to thereby also direct movement of said chair, said control further including a control circuit responsive to an actuation of a disable switch and operative to selectively disable said plurality of switches from directing movement of said chair while power is maintained to said control.

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The chair of claim 27 wherein said disable switch comprises a predetermined combination of said plurality of switches.

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The chair of claim ~~28~~<sup>29</sup> wherein said control further

includes an enable switch for selectively enabling operation of said plurality of switches to direct movement of said chair, and wherein said enable switch comprises said predetermined combination of said plurality of switches.

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30. A powered adjustable chair comprising:
- a seat connected to a base for vertical movement with respect thereto and having a surface for supporting a patient;
- a back secured to said chair proximate one edge of said seat and having a surface for supporting a patient;
- a powered motion mechanism operatively connected to at least one of said seat and said back; and,
- a control electrically coupled to said power lift mechanism and said power recline mechanism for controlling the operation thereof, said control including a plurality of switches operatively connected to a microprocessor for allowing an operator to direct the operation of said control and to thereby also direct movement of said chair, said control including a beep on control circuit including a tone generator responsive to an actuation of said switches to produce an audible tone indicating contact closure thereof, said control further including a beep on switch operative to selectively activate said beep on control circuit.

31. A method of operating a powered adjustable chair including a control electrically coupled to said chair for controlling movement thereof, said control selectively providing alternative first and second output signals in response to actuation of one of a plurality of input switches connected to said control, said first output signal being a maintained output signal that is turned ON in response to closing contacts in said one switch, said second output signal being a momentary output signal that is turned ON in response to closing contacts in said one switch and is maintained ON independent of said contacts in said one switch opening, said momentary output signal being turned OFF in response to the contacts of said one switch opening, the method comprising the steps of:

activating one of said first and second output signals from said control to one of said switches; and,  
actuating said one switch to move said chair to a desired position.

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~~32~~. The method of claim <sup>32</sup>~~31~~ wherein said step of activating one of said first and second output signals comprises actuating a first predetermined combination of said switches.

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33. The method of claim 32 wherein the step of activating a predetermined combination of switches further comprises the steps of:

5 entering a setup mode of operation to disable said control from producing said first and second output signals upon actuation of said one switch; and,

actuating said one switch to activate one of said first and second output signals.

10 34. The method of claim 33 wherein the step of activating the setup mode further comprises the step of actuating a second predetermined combination of switches.

35. The method of claim 34 wherein the method further comprises the steps of:

15 providing a first sensory perceptible indicator in response to selecting said one of said first and second output signals; and,

20 deactivating said setup mode of operation after activating a desired one of said first and second output signals to enable said one switch to receive said one of said first and second output signals.



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The method of claim <sup>36</sup>35 further comprising the step of:

providing a second sensory perceptible indicator in response to selecting the other of said first and second output signals, wherein said second indicator is perceptibly different from said first indicator.

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The method of claim <sup>37</sup>36 wherein the steps of providing first and second sensory perceptible indicators further comprise providing perceptibly different audible tones.

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The method of claim <sup>39</sup>37 wherein said perceptibly different audible tones are tones of different duration.

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The method of claim <sup>36</sup>35 wherein the step of deactivating the setup mode further comprises the step of actuating a third predetermined combination of switches.

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The method of claim <sup>40</sup>39 wherein actuating said second and third predetermined combinations of switches further comprises actuating the same combination of switches.

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41. A method of disabling the operation of a powered adjustable chair operated by a plurality of switches connected to a control, at least some of said plurality of switches producing an output signals from the control in response to actuation thereof to command a powered motion mechanism to cause selected movement of said chair, the method comprising the steps of:

actuating a first combination of predetermined switches of said plurality of switches to activate a disable mode;

detecting the actuation of said combination of predetermined switches;

turning OFF all of said output signals in response to detecting actuation of said combination of predetermined switches;

detecting the activation of said disable mode; and,

preventing the control from producing said output signals in response to the detection of the disable mode;

42. The method of claim 41 further comprising the steps  
of:

actuating a second combination of predetermined  
switches to deactivate said disable mode;

5 detecting the deactivation of said disable mode; and,  
permitting the control to produce said output signals  
in response to detection of the deactivation of said disable mode.

43. The method of claim 42 wherein actuating said first  
and second combinations of predetermined switches further  
10 comprises actuating the same combination of switches.

44. A method of operating a powered adjustable chair comprising a vertically adjustable seat secured to a base and an angularly adjustable back secured proximate one edge of said seat, and a control electrically coupled to power lift and recline mechanisms of said chair for controlling lifting and reclining of said chair, said control selectively providing alternative first and second output signals in response to actuation of one of a plurality of input switches connected to said control, wherein said first output signal is turned ON in response to closing contacts in said one switch to thereby cause a first predetermined movement of said chair, and said second output signal is a maintained auto up output signal that is turned ON in response to closing contacts in said one switch to thereby cause a second predetermined movement of said chair different from said first predetermined movement, the method comprising the steps of:

activating one of said first and second output signals from said control to one of said switches; and,

actuating said one switch to move said chair in accordance with said one of said first and second output signals.

45. The method of claim 44 wherein said second predetermined movement comprises lifting and reclining of said chair into an operative position, the method further comprising:  
activating said second output signal; and,  
5                   actuating said one switch to lift and recline said chair to said operative position.

*Sub A17* 46. The method of claim 44 wherein the step of activating one of said first and second output signals comprises actuating a predetermined combination of switches connected to said control.

10           47. The method of claim 46 wherein said one switch is a switch which causes said back to recline with respect to said base when said first output signal is provided by said control.

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